

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Sands 12-17" Precipitation Zone

Site ID: R067AY146WY

Major Land Resource Area: 67 – North Central High Plains

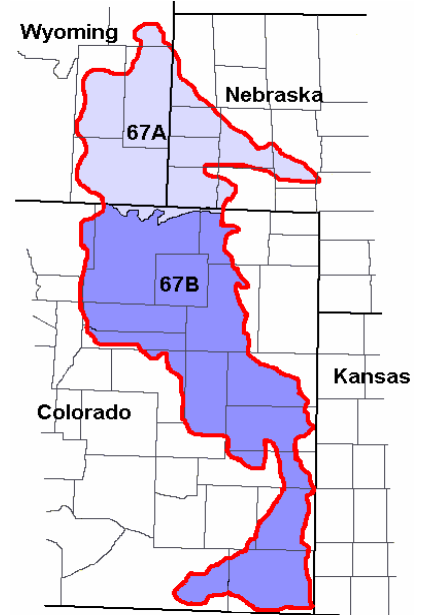
Physiographic Features

This site occurs on gently undulating rolling lands.

Landform: hill sides, ridges

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3800	6500
Slope (percent):	0	30
Water Table Depth (inches):	none	none
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	very low	low



Climatic Features

Annual precipitation ranges from 12-17 inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums, due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Chinook winds may occur in winter and bring rapid rises in temperature. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Wind speed averages about 8 mph, ranging from 10 mph during the spring to 7 mph during late summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 75 mph.

Growth of native cool-season plants begins about April 1 and continues to about July 1. Native warm-season plants begin growth about May 15 and continue to about August 15. Green up of cool season plants may occur in September and October of most years.

The following information is from the "Lusk 2SW" climate station.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	74	148
Freeze-free period (days):	101	181
Mean Annual Precipitation (inches):	12	17

Mean annual precipitation: 15.71 inches

Mean annual air temperature: 45.2 °F (31.0°F Avg. Min. – 59.3°F Avg. Max.)

For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at <http://www.wcc.nrcs.usda.gov/> website. Other climate station(s) representative of this precipitation zone include: "Chugwater, Wheatland 4N, Cheyenne AP and Scottsbluff WSO AP".

Influencing Water Features

Wetland Description:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
None	None	None	None	None

Stream Type: None (Rosgen System)

Representative Soil Features

The soils of this site are moderately deep (greater than 20" to bedrock) to very deep well drained to excessively drained. Soils formed in eolian deposits or alluvium. These soils have rapid permeability. The surface soils will be loamy very fine sand, loamy fine sand, loamy sand or sand. The soil will develop into active sand dunes with the deterioration of cover.

Major Soil Series correlated to this site include: Valentine, Dwyer, Orpha, Tullock, Valent, Dankworth

Other Soil Series correlated to this site include: none

Parent Material Kind: eolian deposits

Parent Material Origin: sandstone

Surface Texture: loamy fine sand, loamy sand, fine sand, sand

Surface Texture Modifier: none

Subsurface Texture Group: sandy

Surface Fragments ≤ 3" (% Cover): 0

Surface Fragments > 3" (%Cover): 0

Subsurface Fragments ≤ 3" (% Volume): 0

Subsurface Fragments > 3" (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	excessive
Permeability Class:	moderately rapid	very rapid
Depth (inches):	20	>60
Electrical Conductivity (mmhos/cm) ≤20":	0	2
Sodium Absorption Ratio ≤20":	0	3
Soil Reaction (1:1 Water) ≤20":	6.6	8.4
Soil Reaction (0.1M CaCl₂) ≤20":	N/A	N/A
Available Water Capacity (inches):	1.0	3.9
Calcium Carbonate Equivalent (percent) ≤20":	0	5

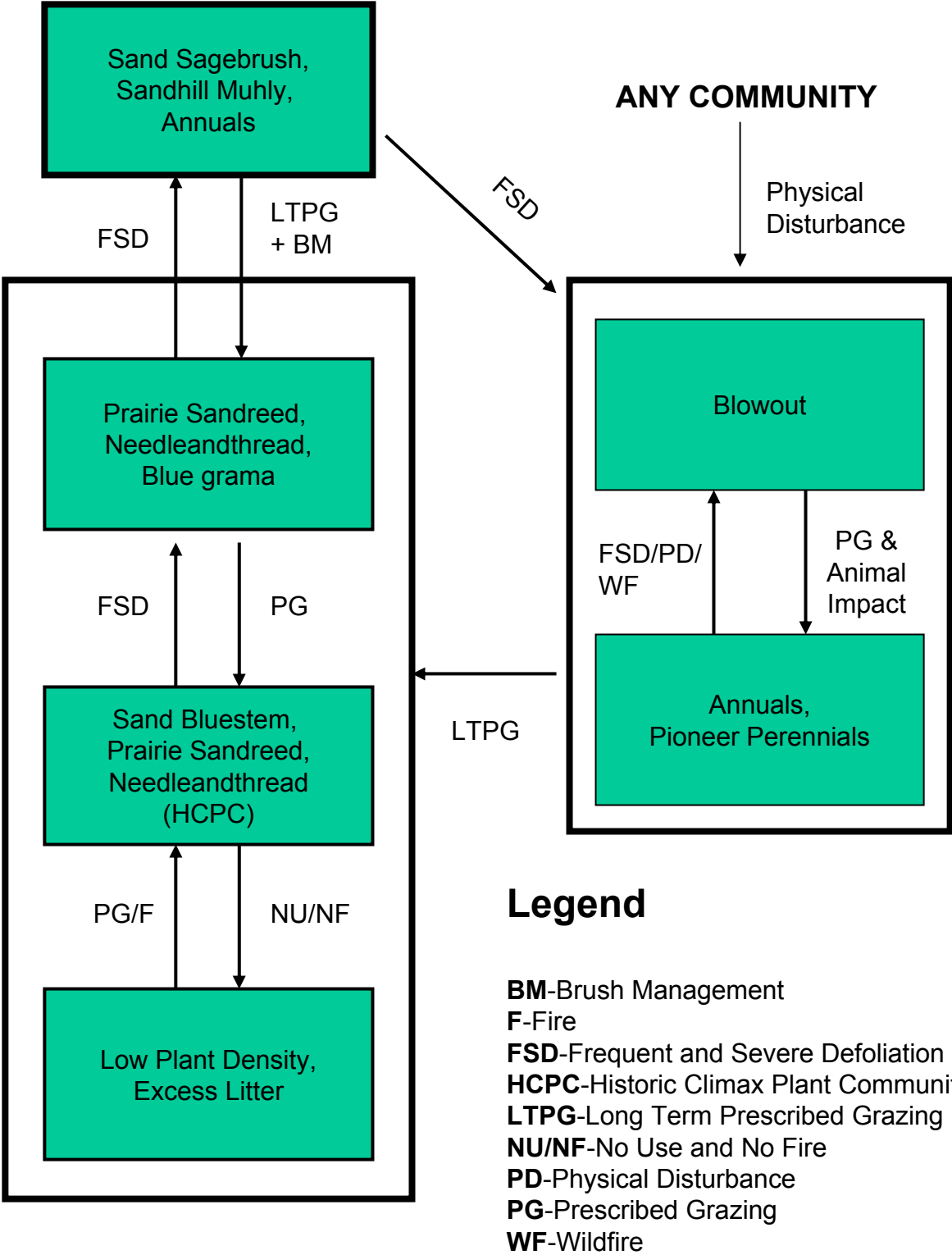
Plant Communities

Ecological Dynamics of the Site

As this site deteriorates from frequent and severe grazing, grasses such as sand bluestem, little bluestem, and needleandthread will decrease in frequency and production. Grasses such as sandhill muhly, blue grama, and threadleaf sedge increase. Under continued frequent and severe defoliation, areas of bare ground increase as plant litter decreases. As this condition persists, erosion becomes so severe that all soil development is lost. Once the soil is re-stabilized, blowoutgrass, sandburs, and annual sunflowers colonize the site.

The historic climax plant community (description follows the State and Transition Model Diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

The following is a State and Transition Model Diagram that illustrates the common plant communities that can occur on the site and the transitions between these communities. The ecological processes will be discussed in more detail in the plant community narratives following the diagram.



Plant Community Composition and Group Annual Production

Sand Bluestem, Prairie Sandreed, Needleandthread Plant Community (HCPC)

COMMON NAME/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Annual Production (Normal Year)		
			Total: 1300		
			Group	lbs./acre	% Comp.
GRASSES AND GRASS-LIKES					
WARM-SEASON TALL GRASSES			1	390 - 780	30 - 60
sand bluestem	Andropogon hallii	ANHA	1	260 - 520	20 - 40
prairie sandreed	Calamovilfa longifolia	CALO	1	130 - 520	10 - 40
switchgrass	Panicum virgatum	PAVI2	1	0 - 130	0 - 10
COOL-SEASON MID-GRASSES			2	130 - 390	10 - 30
needleandthread	Hesperostipa comata	HECO26	2	130 - 390	10 - 30
Indian ricegrass	Achnatherum hymenoides	ACHY	2	0 - 130	0 - 10
WARM-SEASON MID-GRASSES			3	65 - 260	5 - 20
little bluestem	Schizachyrium scoparium	SCSC	3	65 - 260	5 - 20
WARM-SEASON SHORT GRASSES			4	0 - 130	0 - 10
blue grama	Bouteloua gracilis	BOGR2	4	0 - 130	0 - 10
MISCELLANEOUS GRASSES/GRASS-LIKES			5	130 - 195	10 - 15
blowoutgrass	Redfieldia flexuosa	REFL	5	0 - 65	0 - 5
hairy grama	Bouteloua hirsuta	BOHI2	5	0 - 65	0 - 5
prairie junegrass	Koeleria macrantha	KOMA	5	0 - 65	0 - 5
sand dropseed	Sporobolus cryptandrus	SPCR	5	0 - 65	0 - 5
sand lovegrass	Eragrostis trichodes	ERTR3	5	0 - 65	0 - 5
sandhill muhly	Muhlenbergia pungens	MUPU2	5	0 - 65	0 - 5
sedges	Carex spp.	CAREX	5	0 - 65	0 - 5
other perennial grasses (native)		2GP	5	0 - 65	0 - 5
FORBS			6	65 - 130	5 - 10
breadroots	Pedimelum spp.	PEDIO2	6	0 - 26	0 - 2
bush morningglory	Ipomoea leptophylla	IPLE	6	0 - 26	0 - 2
cudweed sagewort	Artemisia ludoviciana	ARLU	6	0 - 26	0 - 2
dotted gayfeather	Liatris punctata	LIPU	6	0 - 26	0 - 2
eveningprimroses	Oenothera spp.	OENOT	6	0 - 26	0 - 2
false boneset	Brickellia eupatorioides	BREU	6	0 - 26	0 - 2
fringed sagewort	Artemisia frigida	ARFR4	6	0 - 26	0 - 2
green sagewort	Artemisia campestris	ARCA12	6	0 - 26	0 - 2
groundsels	Senecio ssp.	SENEC	6	0 - 26	0 - 2
heath aster	Symphyotrichum ericoides	SYER	6	0 - 26	0 - 2
ironweed	Vernonia spp.	VERNO	6	0 - 26	0 - 2
larkspurs	Delphinium spp.	DELPH	6	0 - 26	0 - 2
penstemons	Penstemon spp.	PENST	6	0 - 26	0 - 2
prairie clovers	Dalea spp.	DALEA	6	0 - 26	0 - 2
prairie coneflower	Ratibida columnifera	RACO3	6	0 - 26	0 - 2
rush skeletonplant	Lygodesmia juncea	LYJU	6	0 - 26	0 - 2
scarlet globemallow	Sphaeralcea coccinea	SPCO	6	0 - 26	0 - 2
scurfpeas	Psoraleidium spp.	PSORA2	6	0 - 26	0 - 2
spiderworts	Tradescantia spp.	TRADE	6	0 - 26	0 - 2
veiny dock	Rumex venosus	RUVE2	6	0 - 26	0 - 2
western ragweed	Ambrosia psilostachya	AMPS	6	0 - 26	0 - 2
whiteflower gilia	Ipomopsis longiflora	IPLO2	6	0 - 26	0 - 2
wooly-white hymenopappus	Hymenopappus tenuifolius	HYTE2	6	0 - 26	0 - 2
other perennial forbs (native)		2FP	6	0 - 65	0 - 5
SHRUBS			7	65 - 130	5 - 10
sand sagebrush	Artemisia filifolia	ARFI2	7	0 - 65	0 - 5
yucca	Yucca glauca	YUGL	7	0 - 65	0 - 5
Arkansas rose	Rosa arkansana	ROAR3	7	0 - 26	0 - 2
brittle cactus	Opuntia fragilis	OPFR	7	0 - 26	0 - 2
plains pricklypear	Opuntia polyacantha	OPPO	7	0 - 26	0 - 2
purple pincushion	Escobaria vivipara	ESVI2	7	0 - 26	0 - 2
western sandcherry	Prunus pumila var. besseyi	PRPUB	7	0 - 26	0 - 2
other shrubs and half-shrubs (native)		2SHRUB	7	0 - 65	0 - 5

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors.

Plant Community Composition and Group Annual Production

Sand Bluestem, Prairie Sandreed, Needleandthread Plant Community (HCPC)

COMMON NAME/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Annual Production (Normal Year)		
			Total: 1500		
			Group	lbs./acre	% Comp.
GRASSES AND GRASS-LIKES					
WARM-SEASON TALL GRASSES			1	450 - 900	30 - 60
sand bluestem	Andropogon hallii	ANHA	1	300 - 600	20 - 40
prairie sandreed	Calamovilfa longifolia	CALO	1	150 - 600	10 - 40
switchgrass	Panicum virgatum	PAVI2	1	0 - 150	0 - 10
COOL-SEASON MID-GRASSES			2	150 - 450	10 - 30
needleandthread	Hesperostipa comata	HECO26	2	150 - 450	10 - 30
Indian ricegrass	Achnatherum hymenoides	ACHY	2	0 - 150	0 - 10
WARM-SEASON MID-GRASSES			3	75 - 300	5 - 20
little bluestem	Schizachyrium scoparium	SCSC	3	75 - 300	5 - 20
WARM-SEASON SHORT GRASSES			4	0 - 150	0 - 10
blue grama	Bouteloua gracilis	BOGR2	4	0 - 150	0 - 10
MISCELLANEOUS GRASSES/GRASS-LIKES			5	150 - 225	10 - 15
blowoutgrass	Redfieldia flexuosa	REFL	5	0 - 75	0 - 5
hairy grama	Bouteloua hirsuta	BOHI2	5	0 - 75	0 - 5
prairie junegrass	Koeleria macrantha	KOMA	5	0 - 75	0 - 5
sand dropseed	Sporobolus cryptandrus	SPCR	5	0 - 75	0 - 5
sand lovegrass	Eragrostis trichodes	ERTR3	5	0 - 75	0 - 5
sandhill muhly	Muhlenbergia pungens	MUPU2	5	0 - 75	0 - 5
sedges	Carex spp.	CAREX	5	0 - 75	0 - 5
other perennial grasses (native)		2GP	5	0 - 75	0 - 5
FORBS			6	75 - 150	5 - 10
breadroots	Pedimelum spp.	PEDIO2	6	0 - 30	0 - 2
bush morningglory	Ipomoea leptophylla	IPLE	6	0 - 30	0 - 2
cudweed sagewort	Artemisia ludoviciana	ARLU	6	0 - 30	0 - 2
dotted gayfeather	Liatris punctata	LIPU	6	0 - 30	0 - 2
eveningprimroses	Oenothera spp.	OENOT	6	0 - 30	0 - 2
false boneset	Brickellia eupatorioides	BREU	6	0 - 30	0 - 2
fringed sagewort	Artemisia frigida	ARFR4	6	0 - 30	0 - 2
green sagewort	Artemisia campestris	ARCA12	6	0 - 30	0 - 2
groundsels	Senecio ssp.	SENEC	6	0 - 30	0 - 2
heath aster	Symphyotrichum ericoides	SYER	6	0 - 30	0 - 2
ironweed	Vernonia spp.	VERNO	6	0 - 30	0 - 2
larkspurs	Delphinium spp.	DELPH	6	0 - 30	0 - 2
penstemons	Penstemon spp.	PENST	6	0 - 30	0 - 2
prairie clovers	Dalea spp.	DALEA	6	0 - 30	0 - 2
prairie coneflower	Ratibida columnifera	RACO3	6	0 - 30	0 - 2
rush skeletonplant	Lygodesmia juncea	LYJU	6	0 - 30	0 - 2
scarlet globemallow	Sphaeralcea coccinea	SPCO	6	0 - 30	0 - 2
scurfpeas	Psoralegium spp.	PSORA2	6	0 - 30	0 - 2
spiderworts	Tradescantia spp.	TRADE	6	0 - 30	0 - 2
veiny dock	Rumex venosus	RUVE2	6	0 - 30	0 - 2
western ragweed	Ambrosia psilostachya	AMPS	6	0 - 30	0 - 2
whiteflower gilia	Ipomopsis longiflora	IPLO2	6	0 - 30	0 - 2
wooly-white hymenopappus	Hymenopappus tenuifolius	HYTE2	6	0 - 30	0 - 2
other perennial forbs (native)		2FP	6	0 - 75	0 - 5
SHRUBS			7	75 - 150	5 - 10
sand sagebrush	Artemisia filifolia	ARFI2	7	0 - 75	0 - 5
yucca	Yucca glauca	YUGL	7	0 - 75	0 - 5
Arkansas rose	Rosa arkansana	ROAR3	7	0 - 30	0 - 2
brittle cactus	Opuntia fragilis	OPFR	7	0 - 30	0 - 2
plains pricklypear	Opuntia polyacantha	OPPO	7	0 - 30	0 - 2
purple pincushion	Escobaria vivipara	ESVI2	7	0 - 30	0 - 2
western sandcherry	Prunus pumila var. besseyi	PRPUB	7	0 - 30	0 - 2
other shrubs and half-shrubs (native)		2SHRUB	7	0 - 75	0 - 5

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors.

Plant Community Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition table shown above has been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA – NRCS National Range and Pasture Handbook, Desired Plant Communities will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Sand Bluestem, Prairie Sandreed, Needleandthread Plant Community

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock and can be found on areas that are grazed and where the grazed plants receive adequate periods of rest during the growing season in order to recover. Historically, fires likely occurred infrequently. The potential vegetation is about 80-95% grasses, 0-10% forbs, and 0-10% woody plants. The major tall and mid-grasses include prairie sandreed, sand bluestem, and needleandthread. Other grasses and grass-likes include little bluestem, switchgrass, Indian ricegrass, blue grama, and sand lovegrass. A variety of forbs and half-shrubs also occur, as shown in the following table. Shrubs are not abundant. Plant diversity is high.

The total annual production (lb./ac., air-dry weight) of this plant community during an average year is:

	LOW	AVG	HIGH
GRASS/GRASSLIKE	660	1170	1570
FORB	45	65	90
SHRUB	45	65	90
TREE	0	0	0
TOTAL	750	1300	1750

12-14” P.Z.

15-17” P.Z.

	LOW	AVG	HIGH
GRASS/GRASSLIKE	900	1350	1800
FORB	50	75	100
SHRUB	50	75	100
TREE	0	0	0
TOTAL	1000	1500	2000

The following is the growth curve of this plant community expected during an average year:

Growth Curve Number:

Growth Curve Name:

Growth Curve Description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	15	25	35	15	5	0	0	0

(monthly percentages of total annual growth)

Site Type: Rangeland

MLRA: 67 – North Central High Plains

Sands 12-17” P.Z.

R067AY146WY

The diversity in plant species allows for high drought tolerance. This is a sustainable plant community. Soil erosion is low. The water cycle is functioning. Infiltration is high because of litter accumulation and soil texture. Runoff is low. Areas that have lost all vegetation such as livestock and vehicle trails are subject to runoff and soil erosion.

Transitions or pathways leading to other plant communities are as follows:

- Frequent and severe defoliation, during the growing season will move this plant community initially towards the *Prairie Sandreed, Needleandthread, Blue Grama Plant Community*. Over a period of years, plant species less tolerant to frequent or severe defoliation will begin to decrease, and those more tolerant will begin to increase.
- No use and no fire will move this plant community towards the *Low Plant Density, Excess Litter Plant Community*. Initially, excess litter begins to build-up. Eventually native plant density begins to decrease and weeds and introduced species may begin to invade.

Prairie Sandreed, Needleandthread, Blue Grama Plant Community

This plant community typically develops under frequent and severe defoliation during the growing season of the mid-grasses. The plant community has a reduced component of mid-grasses with an understory of short sod-forming grasses.

Dominant grasses include prairie sandreed, needleandthread, and blue grama. If the plant community received adequate rest periods only during the early part of the growing season, the sand bluestem and little bluestem will have been reduced. If the plant community received adequate rest periods only during the later part of the growing season, the needleandthread and Indian ricegrass will have been reduced. Prairie sandreed is present and distributed across the community in somewhat reduced amounts. The significant forbs include dotted gayfeather, cudweed sagewort, spiderworts, and western ragweed. Shrubs in this community include yucca, sand sagebrush, and Arkansas rose.

Compared to the HCPC, blue grama and upland sedges have increased noticeably. All of the tall and mid-grass species are present but in lesser amounts, especially the bunch grasses. Plant diversity is moderate.

In the 12 to 14 inch precipitation zone, the total annual production (air-dry weight) is about 900 pounds per acre during an average year, but it can range from about 600 pounds per acre in unfavorable years to about 1,200 pounds per acre in above average years.

In the 15 to 17 inch precipitation zone, the total annual production (air-dry weight) is about 1,100 pounds per acre during an average year, but it can range from about 750 pounds per acre in unfavorable years to about 1,450 pounds per acre in above average years.

The following is the growth curve of this plant community expected during an average year:

Growth Curve Number:

Growth Curve Name:

Growth Curve Description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	20	30	25	10	5	0	0	0

(monthly percentages of total annual growth)

Management changes can easily shift this plant community. The soil erosion is low. The water cycle is functioning. Infiltration and runoff are similar to the HCPC. Areas that have lost all vegetation such as livestock and vehicle trails are subject to runoff and soil erosion.

Transitions or pathways leading to other plant communities are as follows:

- Frequent and severe defoliation, throughout the growing season of the tall and mid-grasses, will move this plant community towards the *Sand Sagebrush, Sandhill Muhly, Annuals Plant Community*.
- Prescribed grazing will move this plant community towards *Sand Bluestem, Prairie Sandreed, Needleandthread Plant Community (HCPC)*.

Low Plant Density, Excess Litter Plant Community

This plant community developed under the absence of grazing and fire. At first, excessive litter builds up shading out some plants. Other plants become decadent with low vigor. Bunch grasses often develop dead centers, and rhizomatous grasses form small colonies because of a lack of tiller stimulation. Eventually, the interspaces between plants increase in size leaving more soil surface exposed. Organic matter oxidizes in the air rather than being incorporated into the soil. The dominant plants tend to be somewhat similar to those found in the Historic Climax Plant Community. Dominant grasses include prairie sandreed, needleandthread, and sand bluestem. Other species include sand dropseed and upland sedge. Dominant forbs include annual sunflower, fringed sagewort, and ten-petal mentzelia. The dominant shrub is pricklypear cactus.

Compared to the HCPC, weedy species, cool-season grasses, and sedges have increased. Blue grama has decreased. Rodent activity has resulted in an increase in soil disturbance. Annual bromes tend to invade the community. Cactus and sageworts may increase. Plant diversity is moderate to high.

In the 12 to 14 inch precipitation zone, the total annual production (air-dry weight) is about 1,000 pounds per acre during an average year, but it can range from about 650 pounds per acre in unfavorable years to about 1,350 pounds per acre in above average years.

In the 15 to 17 inch precipitation zone, the total annual production (air-dry weight) is about 1,200 pounds per acre during an average year, but it can range from about 800 pounds per acre in unfavorable years to about 1,600 pounds per acre in above average years.

The following is the growth curve of this plant community expected during an average year:

Growth Curve Number:

Growth Curve Name:

Growth Curve Description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	15	25	25	15	10	5	0	0	0

(monthly percentages of total annual growth)

This plant community is not resistant to change. The introduction of grazing or fire quickly changes the plant community. It is somewhat more vulnerable to severe disturbance than the HCPC. Soil erosion is accelerated because of increased bare ground. Water flow patterns and pedestalling are obvious. Infiltration is reduced and runoff is increased.

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing and/or fire will move this plant community towards the *Sand Bluestem, Prairie Sandreed, Needleandthread Plant Community (HCPC)*. This can occur relatively fast.

Sand Sagebrush, Sandhill Muhly, Annuals Plant Community

This plant community typically develops, over a period of several years, under frequent and severe defoliation during the growing season of the tall and mid-grasses. Short, drought tolerant grasses and shrubs dominate it. Occasional mid-grasses may be found within the canopy of the shrubs where it is protected from grazing.

The dominant grasses are sandhill muhly, sand dropseed, and hairy grama. Other perennial grasses present include prairie sandreed, blowoutgrass and upland sedges. Significant forbs include western ragweed, annual sunflower, and bractless mentzelia. Significant shrubs include sand sagebrush, yucca, and pricklypear cactus.

Compared to the Historic Climax Plant Community, sandhill muhly, sand dropseed and hairy grama have greatly increased and now dominate. Prairie sandreed and needleandthread are limited to areas protected from grazing. Sand bluestem, little bluestem, switchgrass, and Indian ricegrass are absent. Sand sagebrush and yucca are increasing. Plant diversity is moderate.

In the 12 to 14 inch precipitation zone, the total annual production (air-dry weight) is about 800 pounds per acre during an average year, but it can range from about 550 pounds per acre in unfavorable years to about 1,050 pounds per acre in above average years.

In the 15 to 17 inch precipitation zone, the total annual production (air-dry weight) is about 900 pounds per acre during an average year, but it can range from about 600 pounds per acre in unfavorable years to about 1,200 pounds per acre in above average years.

The following is the growth curve of this plant community expected during an average year:

Growth Curve Number:

Growth Curve Name:

Growth Curve Description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	25	30	25	10	0	0	0	0

(monthly percentages of total annual growth)

This plant community is stable and can be very resistant to change. Changes in grazing management may take a long time to affect the plant composition since many of the tall and mid-grasses are absent.

Soil erosion by wind is increased; infiltration is reduced, and surface runoff is increased because of the lack of surface plant litter. Evaporation is also increased.

Transitions or pathways leading to other plant communities are as follows:

- Continued frequent and severe defoliation, throughout the growing season of the mid-grasses, will move this plant community towards the *Blowout Plant Community*. Removal of the protective vegetative cover will greatly increase soil erosion.
- Long-term prescribed grazing will move this plant community towards the *Prairie Sandreed, Needleandthread, Blue Grama Plant Community*. This may take many years depending on the amount of mid-grasses and palatable forbs remaining. Brush management may accelerate this transition.

Blowout Plant Community

This plant community develops from any other plant community with significant disturbances such as frequent and severe defoliation or repeated wildfire. Large areas of blowing sand result in movement and possible enlargement of the blowout. Evaporation and transpiration are extremely high due to bare ground, lack of litter, and extremely low plant density. Soil development is poor. Drought conditions and open winters tend to increase the likelihood of blowout formation.

Compared to the Historic Climax Plant Community, sandhill muhly, blowoutgrass, and sandbur have increased due to their drought tolerance. All other grasses are absent. Lemon scurfpea, Rocky Mountain beeplant, and western ragweed are increasing

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing and concentrated animal impact (such as feeding hay on the blowout) may move this plant community towards the *Annual, Pioneer Perennial Plant Community*. Establishment of vegetation may be accelerated by broadcast seeding of a temporary cover crop such as rye prior to removal of the animal impact.

Annual, Pioneer Perennials Plant Community

This plant community occurs as the blowout plant community becomes vegetated. Plant composition consists of annuals with a few species of perennial forbs and grasses that are very drought tolerant. The dominant grasses include blowoutgrass and sandhill muhly. Annual grasses such as sandbur and stinkgrass have increased. The dominant forbs include lemon scurfpea, Rocky Mountain beeplant, and annual sunflower. Prairie sandreed, hairy grama and Arkansas rose will eventually become more evident.

Compared to the Historic Climax Plant Community, all perennial plants have been greatly reduced with only remnants of the most drought tolerant species present. Plant diversity is very low.

In the 12 to 14 inch precipitation zone, the total annual production (air-dry weight) is about 200 pounds per acre during an average year, but it can range from about 100 pounds per acre in unfavorable years to about 300 pounds per acre in above average years.

In the 15 to 17 inch precipitation zone, the total annual production (air-dry weight) is about 250 pounds per acre during an average year, but it can range from about 100 pounds per acre in unfavorable years to about 400 pounds per acre in above average years.

The following is the growth curve of this plant community expected during an average year:

Growth Curve Number:

Growth Curve Name:

Growth Curve Description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	10	35	35	20	0	0	0	0

(monthly percentages of total annual growth)

This plant community is not resistant to positive change. Planned rest periods during the growing season will increase the number of perennial species and improve the vigor of the plant species present and eventually reduce the amount of bare ground.

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Soil erosion is still high compared to other potential plant communities because of the amount of bare ground. Infiltration is high only because of the soil texture. Runoff is high because of a lack of litter and living plants.

Transitions or pathways leading to other plant communities are as follows:

- Physical disturbances, severe defoliation or wildfire will move this plant community back towards the *Blowout Plant Community*. Removal of the protective vegetative cover will greatly increase soil erosion.
- Long-term prescribed grazing will move this plant community back towards the *Sand Bluestem, Prairie Sandreed, Needleandthread Plant Community*. The rate of this transition can be extremely variable depending on proximity to adjacent species and the availability of a seed source. Range or pasture planting may be the only option to return this community to a productive condition in a realistic time frame but may not be economical.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Sand Bluestem, Prairie Sandreed, Needleandthread Plant Community: The structural diversity in the plant community found on the HCPC is attractive to a number of wildlife species. Common bird species expected on the HCPC include Cassin’s and Brewer’s sparrow, chestnut collared longspur, lark bunting, western meadowlark, and ferruginous and Swainson’s hawks. The combination of mid and tall grasses provides habitat for sharp-tailed grouse in the eastern portions of MLRA-67.

White-tailed and black-tailed jackrabbit, badger, pronghorn, coyote, swift fox, plains pocket gopher, long-tailed weasel, and several species of mice are mammals that commonly use this plant community. Reptiles using this community include western rattlesnake, bullsnake, plains garter snake, western hognose snake, racer, western box turtle, and six-lined racerunner.

Prairie Sandreed, Needleandthread, Blue Grama Plant Community: The reduction in taller grasses in this community results in decreased use by lark buntings and western meadowlarks. Use by long-billed curlew increases, provided there is standing water within ¼ mile. Killdeer, horned larks, and McCown’s longspurs will also make significant use of this community. Pronghorn may forage in this community.

Low Plant Density, Excess Litter Plant Community: This community has low habitat value for most wildlife species. Horned larks may nest in this community.

Sand sagebrush, Sandhill muhly, Annuals Plant Community: This community provides limited foraging for antelope and other grazers. Ground-nesting birds favoring sparse vegetation may use this community. Long-billed curlews will use this community if standing water is present within ¼ mile.

Blowout Plant Community: This community has low habitat value for most wildlife species. Horned larks may nest in this community. When Rocky Mountain beeplant is present, mourning doves will use this plant community in the fall.

Annuals, Pioneer Perennials Plant Community: This community has low habitat value for most wildlife species. Horned larks may nest in this community. When Rocky Mountain beeplant is present, mourning doves will use this plant community in the fall.

Animal Preferences (Quarterly - 1,2,3,4) for commonly occurring plants in MLRA 67 North

Common Name	Scientific Name	Symbol	Cattle	Sheep	Horses	Antelope	Deer	Elk
GRASSES/GRASSLIKES								
alkali bluegrass	<i>Poa juncifolia</i>	POJU	UDUD	NDNU	UDUD	UDUU	UDUU	DPDD
alkali cordgrass	<i>Spartina gracilis</i>	SPGR	UDPU	UPDU	UPDU	UDUU	UDUU	UDPU
alkali muhly	<i>Muhlenbergia asperifolia</i>	MUAS	UDUU	UDUU	UDUU	UDUU	UDUU	UDUU
alkali sacaton	<i>Sporobolus airoides</i>	SPAI	UDPU	UPDU	UPDU	UDUU	UDUU	UDPU
Baltic rush	<i>Juncus balticus</i>	JUBA	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
basin wildrye	<i>Leymus cinereus</i>	LECI4	DPDD	UPDU	DPDD	UDUU	UDUU	DPDD
big bluestem	<i>Andropogon gerardii</i>	ANGE	UDPD	UDDU	UDPD	UDUU	UDUU	UDPD
blowout grass	<i>Redfieldia flexuosa</i>	REFL	UDUU	UDUU	UDUU	UDUU	UDUU	UDUU
blue grama	<i>Bouteloua gracilis</i>	BOGR2	UDPU	UPDU	UPDU	UDUU	UDUU	UDUU
bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	PSSP6	DPDD	UPDD	DPDD	UDUU	UDUU	DPDD
bluegrasses	<i>Poa spp.</i>	POA	UPUU	UPND	UPUU	UPND	UPND	UPUU
bluejoint reedgrass	<i>Calamagrostis canadensis</i>	CACA4	UPDU	UDUU	UPDU	UDUU	UDUU	UPDU
buffalograss	<i>Buchloe dactyloides</i>	BUDA	UDPU	UPDU	UPDU	UDUU	UDUU	UDUU
bulrush	<i>Scirpus spp.</i>	SCIRP	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
Canada wildrye	<i>Elymus canadensis</i>	ELCA4	UDUU	NUNN	UDUU	NUNN	NUNN	UDUU
Fendler's threeawn	<i>Aristida purpurea</i> var. <i>fendleriana</i>	ARPUF	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
foxtail barley	<i>Hordeum jubatum</i>	HOJU	NDNN	NDNN	NDNN	NDNN	NDNN	NDNN
green needlegrass	<i>Nassella viridula</i>	NAV14	DPPD	UPDU	DPPD	UDUU	UDUU	DPPD
hairy grama	<i>Bouteloua hirsuta</i>	BOHI2	UDPU	UPDU	UPDU	UDUU	UDUU	UDUU
Indian ricegrass	<i>Achnatherum hymenoides</i>	ACHY	DPPD	UPDU	DPPD	UDUU	UDUU	DPPD
Indiangrass	<i>Sorghastrum nutans</i>	SONU2	UDPD	UDDU	UDPD	UDUU	UDUU	UDPD
inland saltgrass	<i>Distichlis spicata</i>	DISP	NUUN	NUUN	NUUN	NUUN	NUUN	NUUN
little bluestem	<i>Schizachyrium scoparium</i>	SCSC	UDPU	UPDU	UPDU	UDUU	UDUU	UDPU
muhly	<i>Muhlenbergia spp.</i>	MUHLE	UDUU	UDUU	UDUU	UDUU	UDUU	UDUU
Nebraska sedge	<i>Carex nebrascensis</i>	CANE2	UDUD	UPND	UDUD	UPND	UPND	UDUD
needleandthread	<i>Hesperostipa comata</i> ssp. <i>comata</i>	HECOC8	DPDD	UPDU	DPDD	UDUU	UDUU	DPDD
northern reedgrass	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	CASTI3	UPDU	UDUU	UPDU	UDUU	UDUU	UPDU
Nuttall's alkaligrass	<i>Puccinellia nuttalliana</i>	PUNU2	DPUD	NPND	DPUD	UDUU	UDUU	DPPD
panicgrass	<i>Dichanthelium wilcoxianum</i>	DIWI5	UDUU	NUNN	UDUU	NUNN	NUNN	UDUU
plains bluegrass	<i>Poa arida</i>	POAR3	NPUN	NPUN	NPUN	NDUN	NDUN	NPUN
plains muhly	<i>Muhlenbergia cuspidata</i>	MUCU3	UDUU	UDUU	UDUU	UDUU	UDUU	UDUU
plains reedgrass	<i>Calamagrostis montanensis</i>	CAMO	UPDU	UDUU	UPDU	UDUU	UDUU	UPDU
prairie cordgrass	<i>Spartina pectinata</i>	SPPE	UDPD	UDDU	UDPD	UDUU	UDUU	UDPD
prairie junegrass	<i>Koeleria macrantha</i>	KOMA	UDUU	NDNU	UDUU	UDUU	UDUU	UDUU
prairie sandreed	<i>Calamovilfa longifolia</i>	CALO	UDPU	UDUU	UDDU	UDUU	UDUU	UDUU
reed canarygrass	<i>Phalaris arundinacea</i>	PHAR3	UDUU	NUNN	UDUU	NUNN	NUNN	UDUU
rushes	<i>Juncus spp.</i>	JUNCU	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
sand bluestem	<i>Andropogon hallii</i>	ANHA	UDPD	UDDU	UDPD	UDUU	UDUU	UDPD
sand dropseed	<i>Sporobolus cryptandrus</i>	SPCR	NUUN	NUUN	NUUN	NUUN	NUUN	NUUN
sand lovegrass	<i>Eragrostis trichodes</i>	ERTR3	UDPU	UDUU	UDDU	UDUU	UDUU	UDDU
sand paspalum	<i>Paspalum setaceum</i>	PASE5	NUUN	NUUN	NUUN	NUUN	NUUN	NUUN
Sandberg bluegrass	<i>Poa secunda</i>	POSE	NPUN	NPUN	NPUN	NDUN	NDUN	NPUN
sandhill muhly	<i>Muhlenbergia pungens</i>	MUPU2	UDUU	UDUU	UDUU	UDUU	UDUU	UDUU
sedge	<i>Carex spp.</i>	CAREX	UDUD	UPND	UDUD	UPND	UPND	UDUD
sideoats grama	<i>Bouteloua curtipendula</i>	BOCU	UDPU	UPDU	UPDU	UDUU	UDUU	UDUU
slender wheatgrass	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	ELTR1	DPDD	UPDD	DPDD	UDUU	UDUU	DPDD
spikerush	<i>Eleocharis spp.</i>	ELEOC	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
switchgrass	<i>Panicum virgatum</i>	PAVI2	UDPD	UDDU	UDPD	UDUU	UDUU	UDPD
thickspike wheatgrass	<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>	ELLAL	DPDD	UPDD	DPDD	UDUU	UDUU	DPDD
threadleaf sedge	<i>Carex filifolia</i>	CAFI	UDUD	UPND	UDUD	UPND	UPND	UDUD
threeawn	<i>Aristida spp.</i>	ARIST	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
western wheatgrass	<i>Pascopyrum smithii</i>	PASM	DPDD	UPDD	DPDD	UDUU	UDUU	DPDD
FORBS								
American licorice	<i>Glycyrrhiza lepidota</i>	GLLE3	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
American vetch	<i>Vicia americana</i>	VIAM	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
arrowgrass	<i>Triglochin spp.</i>	TRIGL	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
aster	<i>Aster spp.</i>	ASTER	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
biscuitroot	<i>Lomatium spp.</i>	LOMAT	UDUU	UDDU	UDUU	UDDU	UDDU	UDDU
blue-eyed grass	<i>Sisyrinchium spp.</i>	SISYR	UDUU	UPPU	UDUU	UDUU	UDUU	UDUU
breadroot	<i>Pediomelum spp.</i>	PEDIO2	NUUN	UDUU	NUUN	UDUU	UDUU	UDUU
broadleaf cattail	<i>Typha latifolia</i>	TYLA	UDUU	UUUU	UDUU	UUUU	UDUU	UDUU
buckwheat	<i>Eriogonum spp.</i>	ERIOG	NNNN	UUUU	NNNN	UUUU	UUUU	UUUU
bush morningglory	<i>Ipomoea leptophylla</i>	IPLE	UUUU	UUUU	NNNN	UUUU	UUUU	UUUU
cinquefoil	<i>Potentilla spp.</i>	POTEN	NNNN	UUUU	NNNN	UUUU	UUUU	UUUU
cudweed sagewort	<i>Artemisia ludoviciana</i>	ARLU	UUUU	UDUU	UUUU	UDUU	UDUU	UDUU
curlycup gumweed	<i>Grindelia squarrosa</i>	GRSQ	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
deathcamas	<i>Zigadenus venenosus</i>	ZIVE	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
dotted gayfeather	<i>Liatris punctata</i>	LIPU	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
evening primroses	<i>Oenothera spp.</i>	OENOT	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
false boneset	<i>Brickellia eupatorioides</i>	BREU	NDUN	NDUN	NNNN	NDUN	NDUN	NDUN
fringed sagewort	<i>Artemisia frigida</i>	ARFR4	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
goldenrod	<i>Solidago spp.</i>	SOLID	NUNN	NUNN	NNNN	NUNN	NUNN	NUNN

Animal Preferences (Quarterly - 1,2,3,4) for commonly occurring plants in MLRA 67 North

green sawwort	Artemisia campestris	ARCA12	NNNN	NUUN	NNNN	NUUN	NUUN	NNNN
greenthread	Thelesperma spp.	THELE	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
groundsel	Senecio spp.	SENEC	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
hairy goldaster	Heterotheca villosa	HEV14	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
heath aster	Symphyotrichum ericoides	SYER	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
iris	Iris spp.	IRIS	NUUN	NUUN	NNNN	NUUN	NUUN	NUUN
ironweed	Vernonia spp.	VERNO	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
Lambert crazyweed	Oxytropis lambertii	OXLA3	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
larkspur	Delphinium spp.	DELPH	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
lemon scurfpea	Psoralea lanceolata	PSLA3	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
Maximilian sunflower	Helianthus maximiliani	HEMA2	UDPU	UDPU	UDPU	UDPU	UDPU	UDPU
milkvetch	Astragalus spp.	ASTRA	UDUU	UDUU	UDUU	UDUU	UDUU	UDUU
nailwort	Paronychia spp.	PARON	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
Pennsylvania smartweed	Polygonum pensylvanicum	POPE2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
penstemons	Penstemon spp.	PENST	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
perennial sunflowers	Helianthus spp.	HELIA3	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
phlox	Phlox spp.	PHLOX	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
poison hemlock	Conium maculatum	COMA2	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
prairie clovers	Dalea spp.	DALEA	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
prairie coneflower	Ratibida columnifera	RACO3	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
purple prairie clover	Dalea purpurea	DAPU5	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
Pursh seepweed	Suaeda calceoliformis	SUCA2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
pussytoes	Antennaria spp.	ANTEN	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
rush skeletonplant	Lygodesmia juncea	LYJU	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
sandwort	Arenaria spp.	ARENA	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
scarlet gaura	Gaura coccinea	GACO5	NNNN	NUUN	NNNN	NUUN	NUUN	NNNN
scarlet globemallow	Sphaeralcea coccinea	SPCO	UUDU	UDDU	UUDU	UPPU	UDDD	UDDD
scurfpea	Psoralea spp.	PSORA2	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
showy peavine	Lathyrus polymorphus	LAP02	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
silky prairie clover	Dalea villosa	DAVI	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
slimflower scurfpea	Psoralea tenuiflorum	PSTE5	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
spiderworts	Tradescantia spp.	TRADE	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
stiff sunflower	Helianthus pauciflorus	HEPA19	UDPU	UDPU	UDPU	UDPU	UDPU	UDPU
swamp smartweed	Polygonum hydropiperoides	POHY2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
tenpetal blazingstar	Mentzelia decapetala	MEDE2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
veiny dock	Rumex venosus	RUVE2	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
water hemlock	Cicuta spp.	CICUT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
western ragweed	Ambrosia psilostachya	AMPS	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
western yarrow	Achillea millefolium	ACMI2	NUUN	NUUN	NNNN	NUUN	NUUN	NUUN
white prairie clover	Dalea candida	DACA7	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
whiteflower gilia	Ipomopsis longiflora ssp. longiflora	IPLOL	NUUN	NUUN	NNNN	NUUN	NUUN	NUUN
wild onion	Allium textile	ALTE	UDUU	UDUU	UDUU	UDUU	UDUU	UDUU
wild strawberry	Fragaria virginiana	FRVI	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
woollywhite hymenopappus	Hymenopappus tenuifolius	HYTE2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
TREES, SHRUBS, AND HALF-SHRUBS								
antelope bitterbrush	Purshia tridentata	PUTR2	PDDD	PDDD	DDUD	PDDP	PDDP	PDDP
Arkansas rose	Rosa arkansana	ROAR3	UDDU	UDDU	NUUN	UDDU	UDDU	UDDU
big sagebrush	Artemisia tridentata	ARTR2	UNUU	DUUD	UNNU	PPPP	PDDP	DUUU
boxelder	Acer negundo	ACNE2	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
brittle cactus	Opuntia fragilis	OPFR	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
broom snakeweed	Gutierrezia sarothrae	GUSA2	NNNN	UUUU	NNNN	UUUU	UUUU	UUUU
fourwing saltbush	Atriplex canescens	ATCA2	PDDP	PDDP	PDDP	PDDP	PDDP	PDDP
Gardner's saltbush	Atriplex gardneri	ATGA	PDDP	PDDP	DUUD	PDDP	PDDP	PDDP
greasewood (Toxic in large amounts)	Sarcobatus vermiculatus	SAVE4	DUUD	DUUD	DUUD	DUUD	DUUD	DUUD
green ash	Fraxinus pennsylvanica	FRPE	UUUU	UUUU	UUUU	UDDU	UDDU	UUUU
green rabbitbrush	Chrysothamnus viscidiflorus	CHVI8	DUUD	DUUD	UNNU	PDDP	PDDP	DUUD
leadplant	Amorpha canescens	AMCA6	UPDU	UPDU	UDDU	UPDU	UPDU	UPDU
plains cottonwood	Populus deltoides ssp. monilifera	PODEM	DUDD	DUDD	DUDD	DUDD	DUDD	DUDD
plains pricklypear	Opuntia polyacantha	OPPO	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
ponderosa pine	Pinus ponderosa var. scopulorum	PIPOS	UTTU	UNNU	UNNU	UNNU	UNNU	UNNU
Rocky Mountain juniper	Juniperus scopulorum	JUSC2	UNNU	UNNU	UNNU	UNNU	DUUD	UNNU
rose	Rosa spp.	ROSA5	UDDU	UDDU	NUUN	UDDU	UDDU	UDDU
rubber rabbitbrush	Ericameria nauseosa	ERNA10	UUUU	DUUD	UUUU	UDDU	DUUD	DUUU
sand sagebrush	Artemisia filifolia	ARFI2	UNNU	UNNU	UNNU	UNNU	UNNU	UNNU
silver buffaloberry	Shepherdia argentea	SHAR	DUUU	DUUU	UUUU	UUUU	PDDP	DUUU
silver sagebrush	Artemisia cana	ARCA13	DUUD	DUUD	UNNU	PPPP	PDDP	DUUD
skunkbush sumac	Rhus trilobata	RHTR	DUUD	DUUD	UUUU	DUUD	DUUD	DUUD
spreading buckwheat	Eriogonum effusum	EREF	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
true mountainmahogany	Cercocarpus montanus	CEMO2	DDDD	PDDD	DDDD	UNNU	PDDP	PDDD
western sandcherry	Prunus pumila var. besseyi	PRPUB	DUUD	DUUD	DUUD	DUUD	PDDP	PUUP
western snowberry	Symphoricarpos occidentalis	SYOC	UUUU	UUUU	UUUU	UUUU	DUUD	DUUU
willows	Salix spp.	SALIX	PDDP	PDDP	DUUD	UUUU	PDDP	PDDP
winterfat	Krascheninnikovia lanata	KRLA2	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
yucca	Yucca glauca	YUGL	DUUD	DUUD	UUUU	DUUD	DUUD	DUUD

Animal Community – Grazing Interpretations

The following tables list suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions; however, *continuous grazing is not typically recommended*. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community as described in this ecological site description. Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community 12-14” Precipitation	Production (lbs./acre)	Carrying Capacity (AUM/acre)
Sand Bluestem, Prairie Sandreed, Needleandthread (HCPC)	1300	0.40
Prairie Sandreed, Needleandthread, Blue Grama	900	0.30
Sand Sagebrush, Sandhill Muhly, Annuals	800	0.20
Annuals, Pioneer Perennials	200	0.00
Low Plant Density, Excess Litter	1000	0.30

Plant Community 15-17” Precipitation	Production (lbs./acre)	Carrying Capacity (AUM/acre)
Sand Bluestem, Prairie Sandreed, Needleandthread (HCPC)	1500	0.50
Prairie Sandreed, Needleandthread, Blue Grama	1100	0.40
Sand Sagebrush, Sandhill Muhly, Annuals	900	0.25
Annuals, Pioneer Perennials	250	0.00
Low Plant Density, Excess Litter	1200	0.40

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangelands in this area provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable forage analysis.

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group A and B. Infiltration potential for this site varies from moderately rapid to very rapid depending on soil hydrologic group and ground cover. Runoff is from low to moderate. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to non-existent. Cryptogamic crusts are present, but only cover 1-2% of the soil surface.

The site should show slight to no evidence of rills or gullies. Water flow paths, if any, are broken, irregular in appearance or discontinuous. Wind scoured areas are inherent to this site and some soil

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movement may be noticeable on various landscape positions. Overall, the soil surface should be stable and intact. Sub-surface soil layers are non-restrictive to water movement and root penetration. These soils are susceptible to wind erosion where vegetative cover is inadequate.

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

(R067AY150WY) – Sandy 12-17 " P.Z.

(R067AY102WY) – Choppy Sands 12-17" P.Z.

Similar Sites

(R067AY150WY) – Sandy 12-17" P.Z. has less tall warm season grasses

(R067AY102WY) – Choppy Sands 12-17" P.Z. has steeper slopes & is less productive

Inventory Data References (narrative)

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used.

Inventory Data References

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417	110	1963 -1987	WY	Platte & others

State Correlation

This site has been correlated with Wyoming, Colorado, and Nebraska.

Type Locality

Field Offices

Wyoming: Cheyenne, Douglas, Lusk, Torrington, Wheatland

Nebraska: Bridgeport, Harrisburg, Kimball, Oshkosh, Scottsbluff, Sidney

Colorado: Greeley, Sterling

Relationship to Other Established Classifications

Other References

Other sources used as references include: High Plains Regional Climate Center, USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

State Range Management Specialist

Date

State Range Management Specialist

Date

State Range Management Specialist

Date

Ecological Reference Worksheet

Author(s)/participant(s): _____

Contact for lead author: _____

Reference site used? Yes/No

Date: 1/05 MLRA: 67A Ecological Site: R067AY146WY Sands (Sa)

 This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community *cannot* be used to identify the ecological site.

Indicators. For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for **each** community within the reference state, when appropriate & (3) cite data. Continue descriptions on separate sheet.

1. Number and extent of rills: Rills should not be present

2. Presence of water flow patterns: Barely observable

3. Number and height of erosional pedestals or terracettes: Essentially non-existent

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are *not* bare ground): Bare ground is 20-30% occurring in small areas throughout site

5. Number of gullies and erosion associated with gullies: Active gullies should not be present

6. Extent of wind scoured, blowouts and/or depositional areas: Active blowouts should not be present

7. Amount of litter movement (describe size and distance expected to travel): Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.

8. Soil surface (top few mm) resistance to erosion (stability values are averages – most sites will show a range of values for both plant canopy and interspaces, if different): Plant cover and litter is at 70% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 4 or greater.

9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness for both plant canopy and interspaces, if different): Use Soil Series description for depth and color of A-horizon

10. Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & runoff: Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is Moderately rapid to Very Rapid.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): No compaction layer or soil surface crusting should be present.

12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to): Tall and Mid stature Warm Season Grasses = Mid Stature Grasses/Grasslikes > Forbs = Shrubs

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Very Low

14. Average percent litter cover and depth : Average litter cover is 25-35% with depths of 0.25 to 1.0 inches

15. Expected annual production (this is all above-ground production, not just forage production):
12"-14" Precipitation Zone = 1300 lbs/ac 15"-17" Precipitation Zone = 1500 lbs/ac

16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, "can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site": Sand Sagebrush, Sandhills Muhly, Threadleaf sedge, Brittle cactus, Sandbur, Yucca, and Species found on Noxious Weed List

17. Perennial plant reproductive capability: All species are capable of reproducing